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Broberg, Ole; Jensen, Anna Rose Vagn; Gish, Liv

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Employee participation in product innovation: Crossing organizational boundaries by alignment of work systems

Ole Broberg, Anna Rose Vagn Jensen, Liv Gish

Department of Management Engineering, Technical University of Denmark, Lyngby, DENMARK

1. Introduction

Employee participation in product innovation is part of the emerging field of employee-driven innovation (EDI). EDI builds on the assumption that employees have hidden capabilities for innovation. If this potential can be made visible, recognized, and exploited it is beneficial for both the company and its employees. The company will gain competitive advantage by utilizing the knowledge and creative potential of employees (Kesting & Ulhøi 2010), while the employees may experience motivation, social aspects, and commitment (Onarheim & Christensen 2012).

We assume that opportunities and hindrances for employee participation in product innovation and development partly depends on how these activities are organized in a company. The formality of the product innovation and development process seems to influence the nature of interactions across organizational boundaries. In companies with highly formalized processes, interactions have a transactional managerial bias. In companies having a flexible process, interactions have a more social objective. Other studies indicate that employee participation in product innovation have to be organized at a collective level supported by organizational structure and procedures (Rapp & Eklund 2007).

This paper is based on an interactive research (Eklund et al. 2008) project studying how manufacturing employees can participate in product innovation. The aim of the paper is to describe 1) a framework for analyzing the relationships between manufacturing departments and R&D and engineering departments, and 2) propose an intervention model aimed at improving the participation of workers in product innovation activities in manufacturing companies.

2. Method

Based on an industry screening two case companies in the manufacturing industry were selected. The selection criteria were company size and degree of formalization of product innovation and development. Company A was a large company with many formal systems while company B was a medium-sized company with a flexible approach to product innovation and a low distance between manufacturing and product development departments.

In company A we accomplished ten interviews in the R&D and production engineering departments, and eight interviews in the manufacturing department. In company B eight interviews in the production department were accomplished and twelve interviews in the R&D, engineering and project management departments. Interviews were transcribed and analyzed by help of an inductive methodology (Thomas 2006).

The interaction with each company followed an overall methodology and was separated into three main phases: 1) Diagnosis of the current relationships between manufacturing and product development employees, 2) intervention in form of three collaborative workshops aiming at improving the collaboration practices and participatory product innovation, and 3) evaluation of the intervention outcome on employee participation in product innovation.

3. Results

We suggest a framework for analyzing the relationships between manufacturing and product development employees based on Alter's notion of co-existing work systems (Alter 2010). The two work systems have to coordinate and collaborate while having their own goals, strategies, performance indicators etc. potentially opening for conflicts and misalignments. While understanding each work system by help of this framework the diagnosis should also focus on how the two systems communicate and collaborate. What are the media

used, and what is the content of communication? What is done to support generation of ideas among manufacturing employees, and how are such ideas channeled into the product development work systems?

The analysis of the company-screening phase and the two case companies showed that employee participation mostly was framed in relation to process improvements. The idea of employee participation in product innovation seemed to be unfamiliar and there were no structure or procedures to support this. Diagnosis results from both company A and B showed no formal procedures for including production workers into R&D activities.

We propose an intervention model including three collaborative workshops with participants from the two work systems, and facilitated by the researchers. *Workshop 1* is aimed at creating a common perception of the existing relationships between the two work systems. In a second part the focus will shift to how to improve the relationship with a focus on product innovation. In *workshop 2* the participants are working collaboratively with innovating the company's product and business model based on creative and participatory methods and tools introduced by the researchers. *Workshop* 3 aims at evaluating the outcomes of the two preceding workshops and discusses how to sustain the new work practices and procedures. In workshop 1 two design games is set using cardboard bricks and a game board. In the first game the participants elaborate a landscape of the current communication pattern between R&D and manufacturing using moveable arrows with description of communication content. In the second game the participants map the communication and department contribution during each phase of the product development stage-gate model of the company. In both games the mapping of current practices is followed by suggestions on what can be changed in order to align the communication between the two work systems.

4. **Discussion**

The work systems framework helped operationalizing the analysis of the two main organizational units, the manufacturing department and the product development department. It also helped in analyzing the existing boundaries for interaction between the two systems, including possibilities and hindrances for transferring ideas and knowledge from the manufacturing system to the product innovation and development system. Understanding this pointed in itself to possible new interaction mechanisms supporting employee participation in product innovation.

The intervention model based on collaborative workshops is assumed to contribute to organizational learning in the companies including initiation of new work practices and procedures for collaboration across the two work systems (Ellström 2010). Appropriate boundary objects (Broberg et al. 2011) are introduced in the workshops to facilitate meetings between the two systems participants, and allowing for mutual learning processes to take place.

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